UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF SAFETY AND ENVIRONMENTAL ENFORCEMENT
GULF OF MEXICO REGION

ACCIDENT INVESTIGATION REPORT

For Public Release

1. OCCURRED
   DATE: **27-FEB-2021** TIME: **0420** HOURS
2. OPERATOR: **Shell Offshore Inc.**
   REPRESENTATIVE:
   TELEPHONE:
   CONTRACTOR: **Transocean Offshore**
   REPRESENTATIVE:
   TELEPHONE:

- [ ] STRUCTURAL DAMAGE
- [X] CRANE
- [ ] OTHER LIFTING
- [ ] DAMAGED/DISABLED SAFETY SYS.
- [ ] INCIDENT >$25K
- [ ] H2S/15MIN./20PPM
- [ ] REQUIRED MUSTER
- [ ] SHUTDOWN FROM GAS RELEASE
- [X] OTHER **Dropped Object**

3. OPERATOR/CONTRACTOR REPRESENTATIVE/SUPERVISOR ON SITE AT TIME OF INCIDENT:

4. LEASE: **G17001**
   AREA: **WR** LATITUDE:
   BLOCK: **508** LONGITUDE:

5. PLATFORM:
   RIG NAME: **T.O. DEEPWATER PONTUS**

6. ACTIVITY:
   - [ ] EXPLORATION(POE)
   - [X] DEVELOPMENT/PRODUCTION (DOCD/POD)

7. TYPE:
   INJURIES:
   - [ ] HISTORIC INJURY

	OPERATOR	CONTRACTOR
[ ] REQUIRED EVACUATION		
[ ] LTA (1-3 days)		
[ ] LTA (>3 days)		
[ ] RW/JT (1-3 days)		
[ ] RW/JT (>3 days)		
[ ] FATALITY		
[ ] Other Injury		

   - [ ] POLLUTION
   - [ ] FIRE
   - [ ] EXPLOSION

   LWC
   - [ ] HISTORIC BLOWOUT
   - [ ] UNDERGROUND
   - [ ] SURFACE
   - [ ] DEVERTER
   - [ ] SURFACE EQUIPMENT FAILURE OR PROCEDURES

   COLLISION [ ] HISTORIC [ ] >$25K [ ] <=$25K

8. OPERATION:
   - [ ] PRODUCTION
   - [X] DRILLING
   - [ ] WORKOVER
   - [ ] COMPLETION
   - [ ] HELICOPTER
   - [ ] MOTOR VESSEL
   - [ ] PIPELINE SEGMENT NO.
   - [ ] OTHER

9. CAUSE:
   - [X] EQUIPMENT FAILURE
   - [ ] HUMAN ERROR
   - [ ] EXTERNAL DAMAGE
   - [ ] SLIP/TRIP/FALL
   - [ ] WEATHER RELATED
   - [ ] LEAK
   - [ ] UPSET H2O TREATING
   - [ ] OVERBOARD DRILLING FLUID
   - [ ] OTHER _____

10. WATER DEPTH: **9582** FT.
11. DISTANCE FROM SHORE: **163** MI.
12. WIND DIRECTION:
    SPEED: M.P.H.
13. CURRENT DIRECTION:
    SPEED: M.P.H.
14. SEA STATE: FT.
15. PICTURES TAKEN:
16. STATEMENT TAKEN:

On February 27, 2021, an incident occurred onboard the Transocean Deepwater Pontus working for Shell Offshore Inc. Drilling operations were being conducted at Walker Ridge Block 508 OCS-G 17001 Well #016. The Subsea Supervisor was in the process of tracking the Blow Out Preventer (BOP) gantry crane from the starboard side setback area when a loud "pop" was heard and the operation was stopped. He noticed the encoder pinion and shaft assembly had parted on the crane and fell 72 feet to the transporter deck below. No injuries were reported and an onsite investigation was initiated.

On February 27,2021, the Subsea Supervisor needed to position the BOP gantry crane to align the starboard auxiliary winch over the spare subsea BOP stack to install a coflex conduit. A Toolbox Talk and the procedure to move the BOP gantry crane was signed by all involved subsea crew members. The Subsea Supervisor ensured that the proper rigging was in place and the travel path was clear of obstructions. The Subsea Supervisor maneuvered the BOP gantry crane remotely from the Lower Marine Riser Package (LMRP) level from the starboard to port side, to align the auxiliary winch over the BOP to install the conduit. While operating the crane, a loud "pop" was heard, and the subsea crew called a Time Out for Safety (TOFS) to investigate. The crew noticed the encoder pinion and shaft assembly came apart and fell 72 feet to the BOP transporter cart below. No personnel were in the area due to restricted access under the Red Zone Management Policy. The encoder pinion is made of teflon and coupled with the shaft assembly weighed approximately 2 pounds. The Subsea Supervisor notified the proper personnel about the incident and was instructed to return the gantry crane back to the starboard setback area for inspection.

The Bureau of Safety and Environmental Enforcement (BSEE) conducted an onsite inspection and investigation on February 27, 2021, which included collecting documentation and pictures. The documentation indicated that a third-party company recently performed the annual Preventive Maintenance (PM) inspection on February 18, 2021, with no issues noted. Other documents provided were a BOP Auxiliary Gantry Crane Operations Procedure, Planning and Risk Assessment Prompt Card, and a Pre-Lift Checklist. All of these documents were reviewed and signed by all participating crew members before operations commenced. The scope of work to be performed was to move the BOP gantry crane from the starboard setback area approximately 20 feet to the port side to align the starboard auxiliary winch over the BOP in order to assist installing a coflex conduit line. The Subsea Supervisor proceeded to operate the gantry crane remotely from the LMRP deck level when he heard a strange noise and immediately stopped the movement of the crane to investigate. It was discovered that the 2-pound teflon pinion broke off the encoder shaft assembly on the gantry crane and fell approximately 72 feet to the BOP transporter deck located in the moonpool area. The gantry crane was not performing a lift or bearing any weight but simply traversing from starboard to port. The encoder is mounted vertically on the BOP gantry crane and its function is to track the crane's location as it travels. An electric cable sends a signal regarding the crane's position which penetrates the encoder through a top cable gland. Over time, the top cable gland allowed water to settle and penetrate the encoder causing corrosion. This extensive corrosion caused deterioration to all the connecting points that held the pinion and shaft assembly together. When the gantry crane began to move, the shaft assembly snapped and the pinion fell from the bottom of the encoder, which did not have a secondary retention device.

The encoder's design allowed water to enter and cause corrosion over time. If the electric cable gland would have been on the side of the encoder, water may not have penetrated the encoder and corroded the connection points. This led to the failure of the encoder pinion and shaft assembly during normal cyclical motion. After the third-party company completed their analysis, a new encoder pinion and shaft assembly was installed, and the gantry crane was returned to service. The third-party company plans to issue a Product Bulletin with a potential encoder assembly upgrade by the end of August 2021.

18. LIST THE PROBABLE CAUSE(S) OF ACCIDENT:

Corrosion at the connection points of the encoder assembly.

19. LIST THE CONTRIBUTING CAUSE(S) OF ACCIDENT:

Equipment design. If the electric cable gland would have been on the side of the encoder, water may not have penetrated the encoder and corroded the connection points.

20. LIST THE ADDITIONAL INFORMATION:

n/a

21. PROPERTY DAMAGED:

Encoder and Shaft Assembly

NATURE OF DAMAGE:

Broken shaft on pinion due to corrsion

ESTIMATED AMOUNT (TOTAL): **$8,000**

22. RECOMMENDATIONS TO PREVENT RECURRANCE NARRATIVE:

BSEE Houma District has no recommendations for the Office of Incident Investigation at this time.

23. POSSIBLE OCS VIOLATIONS RELATED TO ACCIDENT: **NO**

24. SPECIFY VIOLATIONS DIRECTLY OR INDIRECTLY CONTRIBUTING. NARRATIVE:

None

25. DATE OF ONSITE INVESTIGATION:

27-FEB-2021

26. INVESTIGATION TEAM MEMBERS:

Jason Lirette / Paul Reeves - Author /

27. OPERATOR REPORT ON FILE:

28. ACCIDENT CLASSIFICATION:

29. ACCIDENT INVESTIGATION PANEL FORMED: **NO**

OCS REPORT:

30. DISTRICT SUPERVISOR: **Amy Pellegrin**

APPROVED DATE: **18-AUG-2021**